

CHAMBERS'S JOURNAL

OF
POPULAR

LITERATURE, SCIENCE, AND ART.

Fourth Series

CONDUCTED BY WILLIAM AND ROBERT CHAMBERS.

No. 648.

SATURDAY, MAY 27, 1876.

PRICE 1½d.

A HIGHLAND PARISH IN THE LAST CENTURY.

IN giving to the public a book entitled *Reminiscences of a Highland Parish*, the late Dr Norman Macleod has conferred a boon upon all who can appreciate simple, homely pleasures, or whose sympathies are natural enough to be touched by the relation of Highland rural life in the last century. When we enter the parish with him, it is not alone the scent of the heather, or the solitary grandeur of hill and loch and precipice, that we feel and see; our impressions of nature become as lively, our sympathies as warm, our hearts as expansive as his own. We learn to judge things by another standard; a simpler, purer moral atmosphere surrounds us; we realise how it is possible to be good without being socially great, to have but a slender purse, and yet to be amply endowed with all those choicer blessings with which Nature dowers her own aristocrats; to live a quiet retired life, far from the world and its busy haunts, and yet to be constantly surrounded by objects of interest and affection.

This book, one of whose chief and most enduring charms is its vivid naturalness, begins with a description of a Highland parish as it existed more than ninety years ago, compiled from materials which the reverend doctor was happily enabled to possess himself of—a large parish in the Isle of Skye, containing somewhere about two thousand souls, and comprising an area of one hundred and thirty square miles, with a sea-board of a hundred. It had two churches, which ‘the minister,’ as Dr Macleod loves to call him, tells us were little better than sheds. They contained few or no seats; and the congregation, sometimes dripping wet, and often footsore and weary, stood during the service, having the good fortune in this case to listen, after their fatigues, to an eloquent and earnest, instead of a prosy and careless sermon.

The manse, to which we are introduced on the title-page, was a homely, comfortable dwelling, surrounded by a cluster of cottages, stables, and offices, and sheltered by some old trees. The

glebe was large; and in addition to it, the minister rented a small farm, the profits of which eked out his scanty income of forty, and latterly eighty pounds a year. Thus, in the small world of the parish, the manse became the centre of a still smaller world of its own; and the word-portraits of one or two of the odd characters who found shelter beneath its roof, or in one or other of the tiny cottages that nestled in cosy nooks in the glebe, are in their way inimitable.

In every Scottish parish is to be found a ‘minister’s man,’ a factotum who discharges various duties in connection with the manse (clergyman’s house) and the church: he is, in fact, the minister’s body-guard, and is usually looked upon as a privileged retainer. We have an admirable specimen in ‘Wee Rory’ or Old Rory, as our ‘minister’s man’ was named, in the parish under notice. Here he is: ‘Wee Rory was rather a contrast to his master in outward appearance; one of his eyes was blind, but the other seemed to have stolen the light from its extinguished neighbour, to intensify its own. That gray eye gleamed and scintillated with the peculiar sagacity and reflection which one sees in the eye of a Skye-terrier, but with such intervals of feeling as human love of the most genuine kind could alone have expressed.’

Old Rory was a dexterous fisher, a capital boatman, a true-hearted, honest, faithful creature, devoted to the minister while he lived; and the story of his death, which took place not long after that of his master, is among one of the most touching incidents in the book.

Then there was old Archy, and James the tutor, and the little one-legged governess, and old Jenny the hen-wife, who had been the nurse of the children, who had received them all into her arms at their birth, and whose sad duty it had been, when death invaded the happy manse circle, to array them for their last long sleep, as she had dressed them for their first.

Then last, not least, we have the minister’s wife, whose portrait is sketched for us in a few masterly touches. A true good woman she must have been, ‘a blessed angel in the house,’

managing all household matters within and without; overseeing everything, contriving somehow that every wheel of the domestic economy should run smoothly, and that her husband, good man, should not be too much harassed by the anxious, ever-recurring thought of how to feed, and clothe, and educate the bairns. Of these, no fewer than sixteen were born and reared in this sweet secluded home. Precluded by circumstances from the enjoyment of many of the luxuries wealth alone can procure, they were so surrounded by an atmosphere of cheerful love, that they were unconscious of the want of anything else. The manse was emphatically a happy home; and the intercourse between parents and children was, as it always is in such cases, frank, unrestrained, kindly, and loving. There was no attempt to frown down innocent mirth: the minister, we are told, who was an excellent performer on the violin, loved to exercise that gift as much as any other he possessed, and liked to see his boys and girls dancing in the evenings. He had eight girls, 'a heavy handful,' as he himself puts it; and perhaps the most charming, and one of the most useful chapters in the book is that in which we read of the education of these girls—how they were trained to be good, loving, true, womanly, domestic, and at the same time refined and cultivated women; how they retained, with all their love of books and nature, a womanly taste for the becoming, which was exemplified in the wonderful skill and ingenuity they manifested 'in making old things look new,' and in so changing the cut and fashion of the purchases made long ago from the packman, that Mary's everlasting silk or Jane's merino seemed capable of endless transformations. Then the manse boys, when we see them hard at work at college, what fine, manly, open-hearted fellows they are; how unselfish, how kindly, how ready to share their small means with others poorer than themselves; not falling back on the slender paternal purse to supply the deficiency thus created, but stinting themselves in order to help some poorer fellow-student, such as 'Macmillan,' or the still more needy 'Macgregor.' The latter, in his gratitude for kindnesses received, insisted upon treating the manse boy in return, the treat consisting of the purchase of two half-penny rolls, one of which he handed to his benefactor, while he greedily devoured the other himself.

As a matter of course, a parish territorially so large, without a single road in it, unless a rude track along the shore could be dignified by the term, involved an immense amount of work, compared to which the preparation of the weekly sermon was a trifle. Walks of sixteen, eighteen, or twenty miles over rough moors, and rapid bridgeless streams, and through shifting, insecure bogs, made part of the ordinary routine of the minister's life. Such feats of pedestrianism were varied by long rides—one of seventy-two miles at a stretch is recorded—and long boating journeys, in which his boys, and his faithful man Rory, were his companions in his boat the *Roe*. Sometimes, in these voyages of the *Roe*, scenes occurred which might well blanch the cheek of a landsman, when the wild seas rose, and the gale rushed to meet the rising tide, and a huge pyramid of green water, flecked with foam, threatened to engulf the tiny boat; and the slightest error on the part of Rory the steersman must have

proved certain destruction to all on board. How Rory was found equal to his task, and how the *Roe* weathered many a stiff gale and heavy sea, are narrated in a manner so graphic and interesting, as must make that chapter, we should suppose, a special favourite with all boys. Not unfrequently, the minister held his diets of catechising, with the sermon which followed, in the open air. On these occasions, he would be seated on a grassy knoll with his rustic hearers around him, the rude psalmody of his audience, sweet as the trill of the mountain lark, ascending right from the heart of the worshipper through Nature's glorious temple of hill and moorland, straight to Nature's God.

Sometimes children were brought to a wild, secluded glen called Corrie Borrodaile, that the minister might baptise them there beside a mountain spring; and to the same place couples occasionally came to be married, it forming a sort of half-way house between the two extremities of the parish. In this daily fulfilment of humble, if you will prosaic duties, the minister lived, a noble, God-fearing, self-denying, hard-working man, far removed from those church politics and party differences which are too apt to sour the most kindly natures, and infuse a spice of gall into even gentle and loving hearts; and here, when he was almost eighty years of age, he came to an end composedly and peacefully. With his life ends what may be called the personal history of the manse; but the interest of the book continues, and is sustained as vividly as before.

Touching on the vexed question of the poor-laws, Dr Macleod has a few suggestive sentences full of kindly wisdom. About the Highland peasantry, the class from which the bulk of the minister's parishioners were drawn, we have much interesting information, as also about the tenants and tacksmen, a well-nigh obsolete race, who have been extinguished by the modern system of letting the land in large sheep-farms. A feast at the house of one of these tacksmen is described, which may well make the mouth of an epicure water, especially if he had prepared for it by a sixteen or seventeen miles' walk across hills and bogs and heathery moorlands. Here is the bill of fare: 'Oat-cake, crisp and fresh from the fire; cream rich and thick, and more beautiful than nectar, whatever that may be; 'blue Highland cheese finer than Stilton; fat hens slowly cooked on the fire in a pot of potatoes without their skin, and with fresh butter—"stoved hens," as the superb dish was called; and though last, not least, tender kid roasted as nicely as Charles Lamb's crackling pig.'

Then we have stories of the snow-storms which occur so often among the hills—that of the widow and her son is exquisitely touching and pathetic—succeeded by some solemn, tender talk about churchyards and funerals. The Celt, we are told, has a strong desire, almost amounting to superstition, to find a last resting-place beside his kindred; and this desire sometimes gives rise to incidents that are almost ludicrous; as when a Highland porter in Glasgow cuts off his finger, and sends it to be buried in the churchyard of the parish, accompanying the amputated member with a bottle of whisky, that its obsequies may be celebrated with all due honour! Among the peasantry, we find that a superstitious belief, not unknown in other parts of the country, prevails—namely, that

a death is often preceded by the appearance of a shadowy phantom funeral, or a warning of its approach given by some such common occurrence as the howling of a dog or the crowing of a cock. During the interval between death and interment, many peculiar customs prevail, which are apparently Roman Catholic in their origin; but one curious superstition they have which seems exclusively Highland; they fancy that the person who is last buried has the dreadful task committed to him of keeping watch over all the graves in the churchyard—a weird wardenship from which he cannot be set free until another death takes place and another grave is opened. In the tale of the Grassy Hillock, we have a very touching account of a Highland funeral. Flory Campbell, a poor widow bereaved of a kind and dutiful son, is the heroine of the tale; and in the mingled dignity and simplicity of her character, in the wild pathos and vigour of her improvised lament, we seem to learn more than volumes of mere dry prosaic description could have told us, of those ‘flowers’ of the Scottish Highlands whom poverty and emigration have now so nearly weeded away.

Of course no description of a parish could be complete without some notice of the schoolmaster, who is as necessary an adjunct to it as the minister himself; and a very worthy, painstaking, hard-working class of men the Scottish dominies generally are. A pleasant picture we have here of the comfortable relations that in bygone days often subsisted between the schoolmaster and the minister. The day has been wet, cold, infected with the gloom of a north-easter, utterly depressing alike to body and soul; when, towards the close of the miserable evening, the dominie steps up to the manse. He knows he will be welcome; who but he can so thoroughly ‘redd’ up the news of the parish, can so accurately separate the conflicting currents of gossip, and sift the true from the false! The delicate matters affecting the public morality discussed, he next tells his parochial chief all about the sick and suffering—how Sandy Macglashin has broken his leg, and Widow Macleay’s big family are down with the measles; and the minister listens with a sympathetic face; and together they consult about the manner and amount of the relief to be afforded to each. Then the preachers at the last sacrament are criticised, and the different styles of preaching discussed; and church and state politics receive a heckling, and various abstruse points of theology are considered; and the rain and mist clearing away, they saunter out in the gray twilight to look at the glebe; and the conversation turns upon the state of the crops, the prospects of the harvest, and the grand question, as affects the minister’s stipend, of whether the next fiars prices will be high or low.

How true to the life all this is—how real! How many of us can imagine the pleasant room to which the minister and dominie return to finish their crack. The cheerful little fire burning in the grate, and the cosy supper of toasted cheese or dropped eggs which follows, with its accompanying glass of ale or modest tumbler of toddy. The emoluments of the schoolmaster, like those of the minister, were very poor indeed, but he was held in honour and respect in the parish. ‘There were few marriages of any importance,’ we are told, ‘at which he was not an honoured guest; in times of

sickness or death, he was sure to be present, with his subdued manner, tender sympathy, and Christian counsel.’ The schoolmaster’s ordinary bill of fare did not contain, we scarcely need to be told, many delicacies, although one is mentioned which might well awaken admiration even in the breast of a Soyer. This is *fuairig*, a Highland dish composed of dry new meal, freshly ground in the quern, and then whipped up with rich cream. ‘Lucky,’ says the reverend doctor, recalling the days of his youth, ‘was the boy who got it.’

Then comes a famous batch of ‘fools’—Allan of the dogs, Donald Cameron, barefooted Lachlan, and light-headed Archy, who had more wit and repartee in his slenderly furnished cranium than many a wise man has in his. How he turned the tables upon his clerical host, a respected minister in Skye, is seen by the following amusing anecdote: ‘An old acquaintance of mine, a minister in Skye, who possessed the kindest disposition and an irreproachable moral character, was somehow more afraid of Archy’s sharp tongue and witty rhymes than most of his brethren. Archy seemed to have detected intuitively his weak point, and though extremely fond of the parson, yet he often played upon his good-nature with an odd mixture of fun and selfishness. On the occasion I refer to, Archy in his travels arrived on a cold night at the manse when all its inmates were snug in bed, and the parson himself was snoring loudly beside his helpmate. A thundering knock at the door awakened him, and thrusting his head, enveloped in a thick white night-cap, out of the window, he at once recognised the tall, well-known form of Archy.

“Is that you, Archy? Oich, oich! what do you want, my good friend, at this hour of the night?” blandly asked the old minister.

“What could a man want at such an hour, most reverend friend,” replied the rogue, with a polite bow, “but his supper and his bed!”

“You shall have both, good Archy,” said the parson, at the same time wishing Archy on the other side of the Coolins. Dressing himself in his home-made flannel unmentionables, and throwing a shepherd’s plaid over his shoulders, he descended and admitted the fool. He then provided a sufficient supper for him in the form of a large supply of bread and cheese with a jug of milk. During the repast Archy told his most recent gossip and merriest stories, concluding by a request for a bed. “You shall have the best in the parish, good Archy, take my word for it!” quoth the old dumpy and most amiable minister. The bed alluded to was the hay-loft over the stable, which could be approached by a ladder only. The minister adjusted the ladder and begged Archy to ascend. Archy protested against the rudeness.

“You call that, do you, one of the best beds in Skye? You, a minister, say so? On such a cold night as this too? You dare to say this to me?”

“The old man, all alone, became afraid of the gaunt fool as he lifted his huge stick with energy. But had any one been able to see clearly Archy’s face, they would have easily discovered a malicious twinkle in his eye, betraying some plot which he had been concocting probably all day.

“I do declare, Archy,” said the parson earnestly, “that a softer, cleaner, snuggler bed exists not in Skye!”

“I am delighted,” said Archy, “to hear it,

minister, and must believe it, since you say so. But you know it is the custom in our country for a landlord to shew his guest into his sleeping apartment, isn't it? and so I expect you to go up before me to my room, and just see if all is right and comfortable. Please ascend!"

"Partly from fear and partly from a wish to get back to his own bed as soon as possible, and out of the cold of a sharp north wind, the simple-hearted old man complied with Archy's wish. With difficulty, waddling up the ladder, he entered the hay-loft. When his white rotund body again appeared as he formally announced to his distinguished guest how perfectly comfortable the resting-place provided for him was, the ladder, alas! had been removed, while Archy calmly remarked: "I am rejoiced to hear what you say! I don't doubt a word of it. But if it is so very comfortable a bedroom, you will have no objection, I am sure, to spend the night in it. Good-night, then, my much-respected friend, and may you have as good a sleep and as pleasant dreams as you wished me to enjoy." So saying, he made a profound bow, and departed with the ladder over his shoulder. But after turning the corner and listening with fits of suppressed laughter to the minister's loud expostulations and earnest entreaties—for never had he preached a more energetic sermon, or one more from his heart—and when the joke afforded the full enjoyment which was anticipated, Archy returned with the ladder, and advising the parson never to tell *fib*s about his fine bedrooms again, but to give what he had without imposing upon strangers, he let him descend to the ground, while he himself ascended to the place of rest in the loft."

All we find in this pleasant volume is genuine and real; here there is no sham, no quack morality, shallow and one-sided. Its teachings are full of charity and kindness, the natural outcome of a faith as full and comprehensive as the large loving heart that harboured it.

FALLEN FORTUNES.

CHAPTER XXVL.—THE WORM TURNS.

THE house in Cardigan Place was as yet unchanged in every respect—just as Dalton had left it on his quitting town—yet everything spoke of gloom and desertion. It was no longer his home, except in name; and in a few days it would lose even the designation. He felt that he could not eat his dinner there, but went out to dine at his club. London was what is called 'empty'; there were only a few millions left in it, who could not afford to go into the country; Piccadilly was a solitude, Pall Mall a waste. Dalton felt qualms as he drew near his club, imagining that every one there would have heard tidings of his downfall, and that he would be looked upon with pitying eyes. He knew how weak it was in him, how false the pride that made him entertain such apprehensions, how altogether vain and egotistic were such feelings, as well as the wisest philosopher that ever founded a school; but so it was. His fears, however, were groundless, for there was not a soul in the place.

The reading-room, ordinarily so thronged at that preprandial hour, was absolutely tenantless; he

might have had six *Pall Mall Gazettes* all to himself. In the huge dining-room of the *Plesiosaurus*, he was the one solitary guest; but as he was about to sit down to his modest repast, there entered one Dawkins, and begged permission to join tables. Dawkins was a middle-aged bore, who could never forget that he had once been a member of parliament. He prefaced every statement with 'When I sat for Siddington,' and dated every event from his admission into 'the House.' No one could have imagined from his conversation that that halcyon time had lasted but six weeks, after which he was unseated for bribery, on petition. By profession he was a civil engineer, and had gained some notoriety, which could scarcely be called fame. He had not invented a tubular bridge, or a submarine tunnel; but he had nursed more than one railway successfully through its sickly childhood, and had found his own account in it—at his banker's. His enemies averred that, in his professional capacity, Mr Dawkins, C.E., had had his hands 'greased;' and even his friends allowed that he was an excellent authority upon coal contracts. Under ordinary circumstances, the most that this gentleman would have got out of John Dalton, in the way of social acknowledgment, would have been a careless nod of the head, and he would have felt himself flattered even by that; for Dalton was one of the most popular men in the club, and in the best set, and Dawkins was nobody there. How he had got into the *Plesiosaurus* at all—which, for so large a society, was somewhat exclusive—was a marvel to those who knew him best: perhaps he had slipped in by greasing somebody else's hands.

On the present occasion, however, Dalton rather encouraged his advances. This was just the man to have heard, in all likelihood, of his altered circumstances, and he did not wish to seem to shrink from companionship, or to appear in dejection. Moreover, even the talk of Dawkins was better than his own sad thoughts.

"Sorry to see you missed your shot at Bampton," said this gentleman in a more familiar tone (or so it seemed to the other) than their previous relations justified. "However, you will try again, of course; it is quite unusual to get one's seat at the first trial. I was fortunate myself in that respect, when I stood for Siddington, but it was quite an exceptional piece of good luck."

For the constituency it doubtless was so, since it got two elections, and all the good things 'going' at such epochs, within two months; but the good fortune of Mr Dawkins himself had certainly been of a very transient nature.

"I am not likely to try again," answered Dalton coldly.

"Ah! found it expensive, I daresay. That is the worst of it. But it's a proud position too—denied proud. I shall never forget the day I first took my seat and the oath."

"I wish you would," thought Dalton cynically. The man's impudence annoyed while it amused

him. 'How comes it,' he asked, 'that you are up in town in a dead time like this?'

'You may well ask. There are a lot of fellows bothering me by every post to run up to the moors, and Warkworth offered me a berth in his yacht. But I am chained to my desk. A golden chain, I'm happy to say, but still it confines me to London for the present. Business, business, my dear sir; you know what that is?'

'Yes; it is very familiar to me.'

'Not more familiar than welcome, I hope, eh?' put in the other. His tone was indifferent, but the glance and manner which accompanied it were so eager and inquisitive, that the contrast was supremely ridiculous. Dalton's sense of humour was tickled.

'Well, I suppose you know all about it?' said he good-humouredly. 'You have doubtless heard that I have been hard hit?'

'I did hear something of the kind, my dear sir; but people tell such lies. I had hoped the report was without foundation. Sorry to find it confirmed on such good authority, I'm sure.'

'Thank you,' said Dalton dryly. He was wondering whether it would be worth while asking this man's advice (he was sharp enough in his way, and especially in speculative affairs with a flaw in them) as to the Brazilian mine.

'Not at all,' continued Dawkins loftily. 'We are all sorry: every man who is worth anything in the club, sir, sympathises with you. A man at your time of life, and in your position, to become the prey of a parcel of swindlers; it is terrible. I had no idea, however, you had gone such a— I mean, that the thing was so serious. I had hoped you were only "winged."'

'No, sir, I am shot,' said Dalton decisively. He spoke so loud that the waiter came, thinking that something was wanted.

'Get some champagne,' said Dawkins: 'the best—the Clicquot—do you hear?' Then, in a confidential voice, he added: 'There's nothing like champagne, my dear sir, when you are down in the mouth. I remember, when I stood for Sid-dington, and my opponent was ahead'—

'If that champagne is for me, Mr Dawkins, I don't drink it,' observed Dalton, in a tone more decidedly *frappé* than the wine itself.

'Very good; then I'll drink it myself,' replied the other cheerfully. 'Now, look here, Dalton; don't be cast down, and bitter with your friends, and that sort of thing. Of course, it's infernally disagreeable to have thrown one's money into the gutter—or down a mine—which is the same thing; but there are ways of getting it out again.'

'What! you think the *Lara* is worth something yet?' inquired Dalton eagerly.

'Not I. It is not worth a shilling—it is not worth sixpence. But money is to be made, my dear fellow—the too friendly phrase jarred upon Dalton's nerves, but he let the other run on: he might really have something to say that would be useful—*thousands* are to be made—ay, and tens of thousands—if you only go the right way to work, and with the right people. There's the rub.'

'And who are the people?' inquired Dalton, growing somewhat impatient of his companion's platitudes.

'Well, there's Beever the banker—he is a baronet now, you know, though I can remember him when his firm was a very one-horse affair;

his wife is a leader of fashion—quite the *ton*, you know.'

Dalton could not restrain a smile. Sir Richard Beever was understood to be a dull man, who, placed by birth in a comfortable financial groove, had, under certain favourable circumstances, made a considerable quantity of money; but his great *coup* was his marriage with the widow of an eminent gin-distiller, which had heaped his money-bags so high that the government—to which he gave his parliamentary support—were compelled to take notice of them, and had in consequence made him a baronet. Sir Richard he had met on one or two occasions in society; but his lady, never—for she had no chance of being admitted into it.

'Now, if you really want, Dalton, to be made *au fait* with the best things going' (Mr Dawkins's countenance became mysteriously serious; and Dalton looked serious too; his mind was occupied for the moment in philological speculation: why was it that men like Holt and Dawkins would use French phrases?)—'if you want to see the best people, financially speaking, that are to be met anywhere, and to have an opportunity—who knows?—of being connected with them'—

'Well, what must I do?' interrupted Dalton sharply; he thought he had schooled himself to stand anything without flinching, but he could not stand Dawkins eloquent.

'Why, you must come and dine with me to-morrow, and meet 'em.'

'Very good; I will,' said Dalton. He could not express much gratitude for the invitation, but his manner was more cordial than his words. He knew—or certainly he would have known a few weeks ago—that it was he who was conferring the obligation. Mr Dawkins would have given his ears, if, in the height of last season, he could have secured John Dalton as a guest. But on the other hand, it was just possible that the man really meant to do a kindness, and perhaps a service to him, in asking him to meet these kings of commerce. At all events, Dalton had nowhere else to go, and any society just now seemed to be preferable to his own. He even reflected with a bitter smile that his acceptance of Mr Dawkins' hospitality would save him the expense of a dinner.

He was now always putting in practice little economies which annoyed him, and was ashamed of himself because they did so. On the morrow he had to see his lawyer, the auctioneer, and Mr Skipton, who had promised to buy his horses; and instead of taking a Hansom, he patronised the omnibuses. Novelty, it is said, is always pleasing, and therefore he ought to have enjoyed the experience of being jolted and squeezed and trodden upon in those vehicles, in none of which he had ever set foot before. He was perfectly conscious that thousands of his fellow-creatures, in most ways equal to himself, and in many superior, were compelled to use this means of conveyance, and that it was a wretched affectation and a contemptible exclusiveness that made it disagreeable to him, much more than its intrinsic inconveniences; but he disliked it very much for all that. He could not shake off, in such general considerations, the thoughts of his own belongings; and when he saw the little batches of nervous and delicate women waiting in the wet for the 'bus to arrive, and struggling for inside places when it did so—an everyday occurrence, but which had never attracted

his attention before—his mind reverted to his wife and Kate, who now, if they lived in town, and wished to get about, must needs form part of that patient throng.

There is nothing like a change—for the worse—of fortune to make people understand that enigma so often talked about, but which so few trouble themselves to solve, how the 'other half' of the world live and move. It seemed to Dalton that next to 'mud-larking'—picking up other folks' coppers in the ooze of the river at low tide—there was nothing more unpleasant than this looking after one's own shillings and sixpences. What galled him still worse were the manifest efforts of his acquaintances to save him small expenses. Mr Skipton, Q.C., was a well-meaning man in his way; but if he had had any delicacy of mind to start with, he had thrown it overboard, for the freer practice of his profession; and he very nearly lost his friend altogether (and what he would have regretted quite as much, his horses), through attempting to treat Dalton to luncheon at the club.

Towards evening, Mr Dawkins called for him, as had been agreed upon, to take him on to his house, which was some way out in the suburbs; and was so resolute in paying for their common cab at the end of their journey, that Dalton was within a very little of knocking him down at his own door-step.

'You know, my dear fellow, you must let your friends pay for you now,' said Dawkins, and that in so loud a tone, that the very footman must have heard it as he opened the door.

'Why did I promise to dine with this hound?' thought Dalton; while the other imagined him, perhaps, to be speechless with gratitude. But the host's coarseness had this good effect upon his guest, that irritation took the place of despondency, and he became quite prepared to play his part in the conversation of the evening, if not exactly to make himself agreeable.

Mr Dawkins was a bachelor; but his house was kept for him by a widowed sister, Mrs Jamrod, a lady of sour aspect, and a confirmed stiffness, which might have been the result of rheumatism, but was, in fact, her imitation of dignity. If she did not absolutely imagine herself to be a princess, she thought Dawkins a prince—this was a really good trait in her character, for he had been generous to her in a certain fashion—whose consanguinity ennobled her; and she honestly believed the great staring 'villa-mansion' in which they lived to be a palace. Her drawing-room fairly blazed with mirrors and gilding; the curtains were of the most brilliant damask; the sofas and conversation-chairs of the newest shapes; and the tables were loaded with books in such gorgeous binding, that they looked no more intended to be read than the centre ornaments of supper-tables to be eaten. They were not read, as Dalton presently discovered in conversation with his hostess, with whom he was left alone for a few minutes, while Mr Dawkins ran up-stairs to 'titivate,' as he called dressing for dinner.

'I know nothing of that class of literature,' she had replied austere to some question of his about a book; 'my dear brother wishes it to have its place here, and therefore here it is; but my own studies, I am thankful to say, are confined within a very small compass: I am only a humble searcher after the Truth.'

'If you find that in a small compass, my dear

madam, you must be exceptionally fortunate,' observed Dalton gravely.

'Sir, there are only two books—the Book and Hervey's *Meditations*—which, in my opinion, repay perusal. Over all the rest, time is spent in vain.'

'Would you exclude Young's *Night Thoughts* and Blair's *Grace*?' inquired Dalton deferentially.

'For myself, yes; for others, however—perhaps for you—they may have some edification.'

'No, not for me,' said Dalton solemnly. 'I am quite of your opinion as to them. If we have only our Hervey, that is sufficient in the way of complement and comment.'

'I am at once surprised and delighted to hear you say so, Mr Dalton. I had taken it for granted—I don't know why, I am sure, for Robert seldom speaks to me of his club friends—that you were by no means seriously inclined.'

'You never were more mistaken in your life, madam,' said Dalton grimly; 'though I don't mean to pretend that it has been always so.'

'Ah, you have had a blow—if anything can be so called that is only material, and affects our prospects in this world alone. So Robert has hinted to me. These trials are often sent for our good. Your chastening.'—

'I say, none of that, Jane,' cried Dawkins, suddenly presenting himself beside them—all shirt-front and watch-chain. 'You have got hold of the wrong man altogether, for that sort of stuff.—Here are the Beevors come, by Jove, first. Now, I am not going to have their dinner spoilt for anybody else, so mind we have it to time.'

The vulgarity of the man's voice and manner had never proclaimed itself so openly to Dalton's ears as now, in his own house. That he should have talked of his fallen fortunes to this hypocritical old woman, was wormwood to him; and from that moment he made up his mind to strike, and not to spare. So far as the lady was concerned, he was unjust, for she really believed—so far as belief was in her—the principles she professed; while there was certainly no breach of confidence in her brother having communicated to her the fact of Dalton's ruin, which was by this time common talk enough. However, he had laid his hand upon his sword, and like a soldier about to sack a town, was resolved to respect neither sex nor age.

At this moment, Sir Richard and Lady Beever were announced. The former was a fat, black, podgy man, with a habitually stertorous breathing, and an occasional habit of blowing like a porpoise, which rather electrified strangers. His wife, on the other hand, was tall and angular, and very careful of her breath indeed. She thought it inconsistent with her exalted position in society to open her mouth to common people, which she considered most persons who were commoners to be. To even her hostess, whose own dignity had vanished at the sight of hers—swallowed up by that Aaron's rod—she did but vouchsafe a few monosyllables. To Mr Dawkins she graciously extended three gaunt fingers covered with rings. When Dalton was introduced to her, she bent her head about a quarter of an inch, and raising her double glasses, surveyed him from head to foot, with a particularity that would have done credit to the Ordnance Department.

'I have heard of you before,' said she curtly.

'You have the advantage of me in that respect,

madam,' replied Dalton, in his most winning tones, 'as doubtless in many others.'

The shaft sped harmless, however, for the lady had already turned away to examine some new arrivals with the air of a naturalist who is investigating specimens of the ordinary beetle. They were common enough of their genus, it must be acknowledged. Gentlemen with pronounced noses, and mispronounced *Bs* and *Ps*, with a cataract of shirt-front, embossed with jewels, and rimmed with the merest margin in the way of waistcoat—all of them of oriental complexion, but with ostentatiously Christian names. Gentlemen, again, with mutton-chop whiskers, and those lively airs with which business is tempered in the City; glib of tongue, elastic of step, and with that overdone geniality towards one another, which is their substitute for friendliness. The ladies were by no means so gushing: they were either depressed in manner, each watching her respective lord with a somewhat servile eagerness to obey the motions of his eye, or they were stiff and formal, some through mere lack of ease, others from the consciousness of recently acquired wealth. Most of it had dropped from the skies (so far as they knew), and it was but natural that they should consider themselves as miraculously favoured. The talk of both sexes was of money: in the one case, of coin, pure and simple—stocks and shares, loans and premiums, surpluses and deficits; in the other, of money's worth, the cost of jewels, of lace, of furniture. It was like a gathering of brokers, and to some extent, perhaps it was one. Stiff and purse-proud as the richest might be, all prostrated themselves before Sir Richard and his lady—the two golden images which bullion and gin had set up. Every boastful, self-asserting voice toned itself down in addressing them; every remark became interrogative, deferential, and subject, as it were, to their supreme approval. Dalton noticed that most of those made by the men were prefaced with, 'A gentleman was telling me the other day, Sir Richard,' &c. &c. He had never before moved in circles, professing to be 'circles,' where men talked of 'gentlemen' and not of 'men.' It was probably rare, he surmised, for these persons to be addressed by a gentleman at all, and when it happened, they made a note of it.

Some of these persons looked inquisitively at Dalton, much as the commercial traveller had done in the train, as though they would say: 'In what line of business is *this* fellow?' They had the sagacity—perhaps the humility—to see that though among them, he was not of them; but that by no means conciliated the object of their curiosity. He was not used to appear in society and not be known. Their talk would have jarred upon him under any circumstances—it was like counting sovereigns out of a bag; but in his penniless condition, he resented it almost as though it had been a personal insult. He felt himself, though certainly without being overcome with sympathy for those about him, becoming gradually assimilated to them, degraded by their companionship, and losing, in some mysterious way, his individual character. If 'evil communications' had corrupted him, they must have had a very rapid effect, or irritation had greatly assisted their influence; but at all events, he was fast losing his 'good manners.' He hardly noticed which of the stiff females it was that Mrs Jamrod confided to his care to take down to

dinner—their dresses all rustled like bank-notes; they were all behung with chains and jewels, and, like the lady of Banbury Cross, made music wherever they moved—and for once neglected 'his duty to his neighbour.' The table was crowded with guests, two individuals instead of one being even placed at the top and bottom. Lady Beever, as the only person of title present of her sex, was one of those who occupied this distinguished position, next the host, and Dalton was placed on the other side of her at right angles. Between the gilt candlesticks, and across the fruit and flowers, he thought he had never seen so many mean and vulgar faces before.

'Good gracious!' muttered he under his breath, 'are these the capitalists?'

'Sir,' said the lady upon his right, 'I did not catch your words.'

'I was wondering,' said he, 'who all these good people were; do you know?'

Dalton had an agreeable vivacity of manner that was greatly appreciated in fashionable circles; but at which his present neighbour was evidently considerably astonished, not to say scandalised.

'Hush!' she said; 'you know Lady Beever surely—that is,' added she, with a reverent recollection of the rank of the person spoken of, 'at least by sight?'

'Yes, indeed; no one who has ever seen her is likely to forget her. It was gin, was it not, that "floated" her?'

'Floated her!' repeated the lady, quite aghast.

'Certainly. I remember her being brought out in the City; though Sir Richard in the end took all the shares. You have heard all about the distillery and the kick in the bottles, and so on; you *must* have heard it.'

'Oh, pray, don't, sir. She is looking this way. No one ever speaks of the gin now. You mustn't talk of her like that; you mustn't, indeed.'

All the starch had suddenly gone out of his companion; she was positively limp and damp with fear. If she had, however innocently, offended Lady Beever, she felt that the gates of Paradise—that is, of Fashion—would be shut in her face; and she did so want to get in.

'Well, let us talk of some one else. Who is that funny little fellow opposite, who has dropped his watch-chain into his soup? Why the dickens does he wear such a chain?'

'Because I gave it him upon his birthday. That is my husband, sir.'

'You don't say so! You must have married very early; a great deal earlier than he did,' was the unblushing reply.

'Well, he is older than I, that's truth,' assented the lady, much conciliated. 'If you are in the City, the name of Binks will probably be familiar to you. I believe my husband is tolerably well known there.'

'Is it possible, my dear madam, that I am speaking to Mrs Binks?'

'Well, I believe Mrs Jamrod introduced us,' returned the lady, with a toss of her head that sent the camellia at the side of it swinging like a pendulum.

'Upon my life, I thought she said "Minx,"' replied Dalton apologetically. 'I was totally unaware of my good fortune—of the honour that had been conferred upon me.'

'Don't speak of it,' said Mrs Binks, with a gracious smile.

'Water!' suddenly exclaimed a commanding voice upon Dalton's left. It was Lady Beevor, speaking to the servant, as he thought; and as none of the domestics heard her, and a water-bottle was opposite to him, he leant forward and filled her glass. To his astonishment and indignation, she stared coldly at him, and drank the water without the slightest acknowledgment of his courtesy. Then it struck him, all of a sudden, that this woman had been speaking to *him* when she had said 'water.' He felt himself turning scarlet.

'You mustn't mind her ladyship's manner,' whispered Mrs Binks good-naturedly; 'she doesn't mean anything by it. I have heard her speak quite as brusquely to Mr Abrahams yonder.'

'Yes, but I am not Mr Abrahams,' said Dalton quietly. His mind was a volcano; he would insult the whole company, except the simple little creature at his right hand, who, unlike that woman from Gin Lane, really did not 'mean anything' by her *gaucheries*.

'Well, no; I suppose you have not made Mr Abrahams' three hundred and fifty thousand pounds,' returned Mrs Binks, not contemptuously, but with a certain touch of pity, which cut Dalton like a knife. Was it possible that even *she* had heard of his impecunious condition?

'How do you know that?' inquired he, smiling. 'Don't I look like a millionaire?'

'Oh, it is not *that*: you look quite the gentleman, I'm sure,' said she with *naïveté*. ('Quite the gentleman,' groaned Dalton to himself. 'What have I done to deserve these things.') 'Only I happened to hear up-stairs that matters had been going wrong with you: I hope they'll mend. There have been times when Mr B. himself has been anxious.' And she nodded towards her husband, who was tossing off a very large glass of champagne with an air of freedom from anxiety that Dalton envied.

'Thank you,' said he softly. He made up his mind, when the hour of retribution came, that he would spare the female Binks for her kind wishes.

Then he turned to Mrs Binks's neighbour—a lady in semi-mourning, and therefore unable, like the rest, to indulge her taste in jewellery, but who had contrived, by the aid of ostrich plumes and other sombre ornaments, to so nearly resemble a hearse-horse, that Dalton half-expected her to 'paw'—with an inquiry as to whether she had been to the last Crystal Palace Concert.

'I have never been to the Crystal Palace in all my life,' was the frigid reply.

'Dear me! You have religious objections, I suppose?' for he concluded that this particular specimen must be after the pattern of her hostess.

'Not that I am aware of,' answered the lady calmly—and always from a sublime height above her interlocutor—a pedestal of superiority. 'My objection to the Crystal Palace is that it is vulgar.'

'But every lady goes to the Crystal Palace,' put in Mrs Binks, with an air of remonstrance.

'That is why I do not go,' answered the lady in black.

'And you are quite right, madam,' said Dalton. 'Keep on not going—say for the next ten years—and you'll be the only woman in England who has not been there. Then you will become unique, and really valuable to your relatives.'

'Valuable to my relatives!' The hearse-horse absolutely appeared to rear, in her astonishment.

'Well, yes; supposing you didn't mind being exhibited, and money was an object to them—What is that you are saying, Sir Richard, about money? Is it tight or loose just now?'

'Well, Mr Dalton, it is tight, very tight.'

The rest of the company were appalled; the idea of interrupting the flow of the baronet's stertorous eloquence, who was just describing how a gentleman of his acquaintance had died worth half a million sterling, and without a will, seemed to them little less than blasphemous; but the banker knew Dalton by reputation very well, and he dared not answer him as he would have wished.

'I hope you don't find it tight, Sir Richard?'

'I! No, sir,' answered the other with irresistible fury at such a supposition. 'The general public are selling out; but I am not the general public;' and he blew like a grampus.

'Thank Heaven for that!' said Dalton. 'It is a satisfaction, I mean, to reflect,' added he demurely, 'that in these speculative times we have one or two houses at least that can be depended upon, such as yours.'

'You are very obliging,' said Sir Richard icily.

'Water!' repeated her ladyship in the same imperative tones as before, pushing her glass towards Dalton. Again he filled her tumbler, and again she gave no sign of consciousness of his existence.

'She *will* have it, will she?' muttered Dalton between his teeth. 'Then, she *shall*.'

'Don't you mind her,' whispered Mrs Binks consolingly. 'I can see that you are annoyed, but I do assure you it is only her way. She has heard of your misfortune, and she cannot help shewing her sense of the superiority of her position. She is really immensely rich, and we must make allowances.'

'If it is owing to the gin, we must excuse it altogether,' said Dalton; 'the police magistrates always deal leniently with similar cases.' He took no pains to lower his voice; and though Lady Beevor did not catch every word of this reply, she certainly caught the word 'gin,' for her face, which was rather gorgeously decorated with 'beauty-spots' and other superficial ornaments of the same kind, became suddenly one universal red. The fatal monosyllable seemed to echo all round the table; every one stared at one another with a wild surprise, at the introduction of a topic known to be so distasteful to Sir Richard and his lady. She had escaped from gin to be the wife of a banker and a baronet, and any reference to the trade by which she had obtained her wealth was hateful to her, and tabooed by all her friends.

The 'sensation' was so excessive as to put a stop to all calculation—for that was what the conversation had consisted in. 'Silence' may be 'golden' in a general way, but at Mr Dawkins's table silence must have been something else, for speech was golden—since it solely concerned itself with gold. Scarcely any one opened his mouth from that time till long after the dessert was placed upon the table, except to put something into it. Then Lady Beevor turned round to Dalton, and, looking him straight in the face, opened her mouth—to yawn. Genuine female leaders of society, patrons of the Almack's of old days, Dalton knew to have been very rude, even offensively

rude; but this woman's conduct was utterly unparalleled in his experience.

He looked at her with a sweet smile—while she yawned again—and leaning towards her, confidentially remarked, in a tone of sympathy that could be heard all round the table: 'I, too, madam, have a large tooth at the back of *my* head, stopped with gold.'

If the magnificent but utterly misplaced candelabra which hung from the dining-room ceiling, and filled the room with glare and heat, had fallen plump upon the flowers and fruits, the sensation could hardly have been greater. The ladies rose and left the room in a disorderly manner; the men remained staring at Dalton with resentful alarm, much as a flock of sheep face a strange dog. As for him, he passed the claret, and proceeded to skin a peach during a silence that would have been profound but for Sir Richard's stertorous breathing. Mr Dawkins afterwards said that during that terrible pause—finding it a relief, and almost a necessity to resort to speculation—he laid five to two in his own mind upon the double event of the banker having a fit and his widow marrying again. It was at least five minutes before conversation was resumed, when Dalton finished his peach and rose from the table. He had shewn himself ready to answer for his conduct, but he had no intention of presenting himself, after it, in the drawing-room. Dawkins followed him into the hall.

'Upon my life,' he said, 'I think you were deceived rude to Lady Beever.'

'My good sir, I only wished her to understand that I was not so utterly penniless as she imagined; that I had a bit of gold in my possession still, and in the same place where she had one herself. I could not be so dull as your friends, but I endeavoured to be as vulgar, and I flatter myself I succeeded.' And with that he lit a cigar, and marched out of the house.

This shocking affair supplied a subject of conversation in capitalist circles for some months, almost to the exclusion of the usual Pactolus stream of talk.

HAPPY ACCIDENTS.

SELDOM do men sit down with a steady resolve, a determined purpose, to discover some new principle or invent some new process. When they do so, there is a lurking idea of the kind of thing they want, a dim perception of the direction in which success may most reasonably be sought. Generally speaking, something is concerned which, for want of a better term, we call 'accident.' An appearance presents itself, or an effect is produced, which the observer neither designed nor expected; an accident, certainly, so far as he is personally concerned. It may be a manifestation, until then unknown, of some natural force or property; or it may be an action of one substance on another, susceptible of useful practical application. This is, briefly expressed, the distinction between a *discovery* and an *invention*. But the important point to notice is, that the value of the accident depends on the kind of man, or kind of mind, by whom or by which it is first observed. If the soil is not sufficiently prepared, the seed will not grow.

Thousands of men had seen light reflected from distant windows, and variations in the light according to the angle of reflection; but a well-prepared mind, on one occasion, suddenly drew from this phenomenon an idea which established the beautiful science of the Polarisation of Light.

It is pleasant to read of the manner in which shrewd minds have turned an accidental observation to practical advantage.

Galileo, being one day in the cathedral at Pisa, watched the oscillations of a lamp suspended from the roof. He observed that the swings or vibrations were all performed in equal times, whether the arc of swing were great or small—whether the lamp had only just begun to oscillate, or had nearly finished. Following up the observation when he returned home, he made temporary pendulums of various lengths, any kind of heavy weight suspended by a string; and he found that the time of oscillation for each pendulum bore a definite ratio to the length of string. Armed with this twofold knowledge, he virtually gave birth to the application of the pendulum as a regulator of clocks—an invention to which the precision of modern astronomy owes so much.

What to say of Sir Isaac Newton and the apple, we scarcely know. Some biographers pass by the incident without notice; some express a doubt of its truth; while others see no reason why an acute mind, trained to mathematical thought, should not draw a valuable conclusion from the incident observed. The story runs thus, in the words of Pemberton, the contemporary and friend of the illustrious philosopher: 'One day, as he was sitting under an apple-tree at Woolsthorpe, an apple fell before him. This incident, awakening in his mind the ideas of uniform and accelerated motions, which he had been employing in his method of fluxions, induced him to reflect on the nature of that remarkable power which urges all bodies to the centre of the earth. . . . "Why," he asked himself, "may not this power extend to the moon; and then what more would be necessary to retain her in her orbit about the earth?" This was but a conjecture; and yet what boldness of thought did it not require to form and deduce it from so trifling an accident!'

The reflecting apparatus for lighthouses arose out of a wager, if the facts are correctly recorded. Somewhat more than a century ago, among the members of a small scientific society in Liverpool, one offered to wager that he would read the small print of a newspaper by the light of a farthing candle placed ten yards or thirty feet distant. The wager being accepted, he coated the inside of a wooden board with pieces of looking-glass, forming a rough substitute for a concave mirror; placing a small lighted candle in front of this mirror, the rays of light were reflected, and converged to a focus ten yards on the other side of the candle, and the light at that focus was sufficient to enable the experimenter to read a newspaper. Of course the distance of the candle from the mirror was made dependent on the curvature of the mirror itself. An observant practical man, dockmaster of Liverpool, was present. The idea flashed upon him, that if the light of a farthing candle could in this way be thrown out to a distance, the light of a large lamp could similarly be projected to a mile or miles away. The idea

grew into form, and resulted in the invention of the reflecting lighthouse, or rather the reflecting apparatus for lighthouses.

One day, Lundyfoot, a snuff manufacturer, was drying some snuff, a necessary process in its preparation. Through a little neglect, the snuff was allowed to be overheated, till it became charred, scorched, or burned. In the view of a prosy jog-trot tradesman, the commodity would have been thrown away as spoiled; but this manufacturer, noticing the pungent character of the snuff, and how it tickled the nose, and knowing that some men like to have the nose tickled more than others, resolved to try whether 'high-dried snuff' could be brought into favour. It not only did so, but proved a source of wealth to him. Any man may burn a commodity by carelessness; it is the observant man who ingeniously turns the accident to a good account.

The writer has seen a piece of printed calico or muslin that exemplified the way in which an accident led, not exactly to an invention permanently useful and profitable, but to a pattern that had a great success in one particular year. A piece of cotton being printed at one of the great Manchester establishments, became a little displaced. While travelling upwards from the printing cylinder, a portion of the cloth shifted into some disarrangement, and was printed a second time, but in a different direction from the first. The effect was very singular. The original pattern was a simple one; but the diagonal repetition produced a forked-lightning effect of a kind which a designer would not have been likely to hit upon. The master-printer took a hint from the accident; he suggested the engraving of a design in which the forked-lightning effect should be utilised. It proved to be one of the most successful patterns ever introduced by the firm. The reader may form some idea of the way in which this fortunate mishap occurred; for one corner of a newspaper sometimes accidentally gets printed a second time, but at a different angle. A muddle it makes when the impress consists of words and sentences; but when it consists of geometrical lines or fancy arabesques, the product may be a fortunate one to a man who has his wits about him.

One of the producing causes of prosperity of the Staffordshire pottery manufacture was the discovery of a cheap durable glaze, applicable alike to brown ware and white ware, and greatly increasing their usefulness by making the surface impervious to water. The discovery, according to Shaw, the historian of that county, was due purely to accident. At Stanley Farm, situated a few miles from Burslem (now the very centre of the Potteries district), a maid-servant was one day heating a strong solution of common salt, to be used in curing pork. During her temporary absence from the kitchen, the liquid boiled over. Being in an unglazed earthen vessel, the solution, spreading over the outside, produced a chemical action which she little understood, and which did not compensate her for the scolding she received. Some of the elements of the liquid combined with some of those of the highly heated brown clay surface to produce a vitreous coating or enamel, which did not peel off when the vessel was cold. The humble brown-ware vessel acquired historical celebrity. A Burslem potter, learning what had taken place,

saw that glazed ware might possibly hit the taste of the public; he introduced the system of glazing by means of common salt, a system at once cheap, easy, and durable; and England has made many a million sterling by the discovery.

One of the pleasantest anecdotes illustrative of an invention being suggested by accident, bears relation to the stocking-loom or knitting-frame. The story has been told in two or three different forms; but the most popular version accords with a picture and inscription preserved by the Framework Knitters' Company. About a hundred and ninety years ago, Mr William Lee, of St John's College, Cambridge, was expelled for marrying in disregard of the statutes of his college. Having no fortune on either side, his young wife contributed to their joint support by knitting. The husband, watching one day the movements of her fingers, suddenly conceived the idea of imitating them by mechanical means, in order that she might get through her work in a manner easier to herself, and perchance increase her emoluments. The ingenious stocking-frame was the result of his cogitations. In hand-knitting, polished steel needles or wires are used to link threads together into a series of loops, closely resembling those produced in tambouring. In framework-knitting, one person can manage a large number of knitting-needles at once—pieces of steel midway in shape between straight wires and bent hooks, and aided by jacks or vibrating levers, treadles, rows of bobbins, and other clever contrivances. William Lee's first stocking-frame was in all probability small and very rough; but it had in it a potentiality (as Dr Johnson might have called it) of developing great things, until at last it has culminated in that masterly piece of mechanism, the circular rotary hosiery machine.

Lucky accident, in like manner, led, about the year 1764, to the invention of the spinning-jenny, one of the foundations of the amazing prosperity of the cotton manufacture. But as in most instances of the kind, the soil was prepared in some degree for the reception of the seed, the accident would probably have passed unnoticed if there had not been a mind in a condition to appreciate it. James Hargreaves, of Standhill, near Blackburn, was a humble man who lived by hand-spinning and weaving, his wife and children aiding in their several ways. He succeeded in expediting his work by inventing a carding-machine to comb out or straighten the fibres of cotton, as a substitute for hand-cards (wires inserted in a flat piece of wood). In spinning, after the carding and other preparatory processes had been completed, he frequently tried to spin with two or three spindles at once, by holding two or three separate threads between the fingers of his left hand, and thus double or treble the amount of work effected in a given time. The horizontal position of the spindles, however, baffled him; his fingers and the spindles would not work in harmony. One day, in 1764, a little toddling member of his family upset the spinning-wheel while it was being worked. Hargreaves noticed that, while he retained the thread in his hand, the wheel continued to revolve for a time horizontally, giving a vertical rotation to the spindle. An idea started into his brain at once; here was the very thing he wanted. He saw that if something were contrived to hold the roving (a thickish coil of cotton) as the finger and thumb

were wont to do, and to travel backward and forward on wheels, several spindles might be used at once. He set to work; and the result was a frame or machine which he called the spinning-jenny (very likely his wife's Christian name was Jenny), having eight spindles. The family at once largely increased their weekly earnings. How it happened that through workmen's spite and manufacturers' greed, or whether it was, as has been said, that a better idea than his had been previously started and acted upon by others, Hargreaves was never permitted to secure an adequate return for his ingenuity, we need not now stop to relate; Lancashire accumulated wealth from the spinning-jenny (amplified by degrees to eighty spindles), but regarded little the brains that had enabled them to do so.

When maidens are 'doing their hair,' an important element of daily duty in many a household, they may perhaps be gratified in learning that this process led accidentally to a very useful invention. Joshua Heilman, engaged in the cotton manufacture at Mulhouse, in Alsace, was long meditating on the possibility of inventing a combing-machine for long-staple cotton, the carding-machine until then employed being better suited for cotton having a short staple. He tried, and tried again, and impoverished himself by preparing machines and models which failed to realise the intended purpose. Brooding over the matter one evening, he watched his daughters combing their hair, and noticed (perhaps for the first time *really* noticed) how they drew the long tresses between their fingers, alternately with drawing the comb through them. The thought struck him, that if he could successfully imitate by a machine this twofold action, so as to comb out the long fibres of cotton, and drive back the shorter by reversing the action of the comb, his long-sought object would be pretty nearly attained. Armed with this new idea, he set to work with renewed cheerfulness, and invented a beautiful machine, which enabled him to comb cheap cotton into moderately fine yarn, more easily and with less waste than by any process until then known. One of our Royal Academicians, about a dozen years ago, brought the skill of his pencil to bear upon this pleasant subject for a picture—Heilman watching his daughters combing out their glossy tresses.

Hostlers, horsey men by occupation, know but little beyond horsey subjects. One of the fraternity, however, was unconsciously the means of suggesting an idea which brought highly profitable results—not, it is true, to himself, but to an important manufacturing district. In 1720, a potter named Astbury was journeying on horseback from Staffordshire to London. Stopping awhile at Dunstable, he obtained assistance in regard to a weakness in the eyes of his horse. The hostler at the inn, making use of such bits of veterinary knowledge as he possessed, took a piece of flint, calcined it in the fire, pulverised it, and blew some of the powder into the horse's eyes. The change produced in the flint by burning, from a black stone to a white powder, struck Astbury with a new idea. Would it be possible to produce white flint ware, harder and more durable than white ware made wholly of clay? He collected a small stock of flints from the chalk hills of Dunstable, and took them back with him to Staffordshire. The result more than realised his

expectations; powder of calcined flint, mixed with pipe-clay, produced a most excellent ware, and established a new branch of the potter's art that took firm root in Staffordshire.

AN ELECTION STORY.

IN TWO CHAPTERS.—CHAP. II.

WITH a violent effort Lady Waring released herself, and again went hastily towards the door. Whether her husband would have struck her, cannot be said; he was almost beside himself with passion at her persistent defiance, and was following with arm upraised, and a savage look in his eyes, when another member of his committee was heard blandly inquiring for him in the passage. Checking himself, he tried to smother down his anger—for a time, while Lady Waring escaped, and hurried to her own private sitting-room. Sir Harry found, much to his annoyance, that he was expected to dine with the chairman of his committee (whose entrance it was had interrupted the scene between Lady Waring and himself), to meet a local orator who had promised to speak at the meeting; and after dining, they would proceed together to the town-hall, where the committee and other prominent members of the party would be assembled, ready to accompany Sir Harry to the platform. He could not well refuse the invitation; so, after having charged Lady Waring's maid to impress upon her mistress the necessity of punctuality at the meeting, and ordered the carriage to be brought to the door for her in good time, he left the hotel with his friend.

Sir Harry tried to persuade himself that his wife would go after all, yet, knowing her high spirit, he still felt great doubt and anxiety on the subject. But he hoped for the best; for her own sake, Agnes would hardly defy him so utterly, when she thought the matter over quietly.

Meanwhile, Lady Waring paced up and down her room, thinking over all that had been said and done in this last most serious quarrel between her husband and herself. She had been hectoring and insulted—he had almost struck her; he had actually bruised her in his brutal grasp—and as she looked at the dark, disfiguring mark on her arm, her longing for revenge increased. But for the personal degradation, she would have liked to have shewn that bruise to the mob which raised cheer after cheer around the hotel for Sir Harry Waring. She would leave him—but she would punish him first, and so that he should never forget it. For a long time she adhered to her resolution of not attending the meeting, and smiled to herself as she pictured his rage at her non-appearance; but suddenly a new thought entered her mind, a thought which brought the bright flush to her cheeks, and a look of daring and determination in her eyes. She sat down for some moments, thinking deeply. Then she rose and opened her escritoire, and hastily penned a short note, which was sent at once to the proprietor of a large drapery establishment in the town (much to the astonishment of her maid, as her wardrobe was well supplied, and the costume with which she had intended to dazzle the

eyes of the Westdown electors had already been decided upon); and afterwards wrote two brief letters, which she ordered to be posted immediately, and a longer one, which she sealed, and put apart by itself. Before long, a 'young person' arrived from the draper's, accompanied by a porter carrying a large parcel. This parcel was conveyed to Lady Waring's own room; and having dismissed her maid, she and the 'young person' had a long and mysterious consultation together, from which the latter retired at length with a very puzzled expression of face. Then Lady Waring gave her maid an order to pack one of her mistress's large trunks with such dresses, linen, and other necessities of apparel as would be required for a short visit—and also to pack her own box, and to lock and cord them ready for a journey.

'Are you going to send the luggage on before, my lady?' she at last ventured to ask, thinking her mistress might leave Westdown directly the election was decided; but Lady Waring coldly replied in the negative. When she had had some slight refreshment in her room, it was time for her to dress for the meeting. Her toilet did not take so long as usual, and the carriage in which she was to proceed to the hall (where she was to meet a party of sympathising lady-friends, who were to occupy the orchestra with her), was not kept waiting.

When she swept from the room with graceful stately tread, the people of the hotel, who were as usual clustered in the hall to see her enter the carriage, did not utter their customary murmur of approbation; on the contrary, they shrank back in silent amazement as she passed by, with one of her slight dignified bows to the landlord; and her maid, when she returned from settling her lady comfortably in the carriage, looked scared and startled as she joined in the buzz of conversation which greeted her.

The meeting at the town-hall had begun. The room was densely crowded, and there was scarcely a person present who did not wear a yellow flower or favour. The chairman, a gallant white-haired old gentleman, had in his courtesy delayed commencing as long as possible, so that Lady Waring should grace the proceedings, before he rose to deliver his opening speech. But the increasing murmur of the crowd, a few impatient calls of 'Time!' and then a unanimous trampling of the feet, had decided him upon beginning in her absence. Sir Harry sat at the front of the platform, surrounded by his partisans, attempting to look bland and confident as a parliamentary candidate should, but in reality in a state of nervous terror, lest his wife should carry out her threat of being absent; and as he thought of the extreme probability of her doing so, he vowed mentally to conquer her stubborn spirit yet. Both he and his supporters cast anxious looks towards the gallery; and many in the crowd noticed Sir Harry's extreme pallor, but attributed it to his enervating and fatiguing canvass. At last, when the chairman's flow of platitudes was drawing to an end, and Sir Harry was about to rise to deliver, with all the eloquence at his command, his final address, there was a faint stir and rustle among the few ladies already assembled in the orchestra; and then a banging of doors was heard, and a slight disturbance, which announced to the meeting that Lady Waring had come at last.

Every eye in the room was strained to have a full view of the candidate's beautiful wife, every hand was ready for a thundering round of applause with which to greet her, every voice was ready to utter the deafening cheer of welcome as she entered; and Sir Harry for the first time that evening breathed freely. He had conquered, then! That was as it should be. The door of the orchestra opened, and Lady Waring entered, and without any recognition of those around her, walked with a firm step to the front of the gallery, where she stood for some moments, looking intently at the crowd below, her handsome features pale and still, yet with a half-smile on her lips. Her tall form rose as high above the ladies near as her beauty surpassed theirs. She stood, the embodiment of perfect grace, a picture of loveliness never to be forgotten by those who beheld it. But not a cheer was raised, and save for a slight buzz of whispering which arose as all gazed at the candidate's wife, the vast assembly was silent; and Sir Harry sank back into his chair speechless with passion and amazement. For Lady Waring was dressed in *blue*!

The silence lasted but a few moments, and then arose a confused sound of exclamations of astonishment, cries of 'Order!' and expostulations from the chairman, mingled with a storm of hisses and groans. Some of the committee whispered to Sir Harry in hurried tones, and he left the platform, and tried to force his way through the crowd to the door, followed by some of the more intimate of his adherents.

During this time, Lady Waring had been standing in the same place, unmoved by the uproar, or the entreaties of one or two of the ladies around, who begged her to leave the hall; but when she perceived that Sir Harry had left his seat, she bent gravely to the people who were clamouring below, and then hurried from the gallery. A perfect babel of sound arose when she had disappeared. The crowd having recovered from its first feeling of overwhelming astonishment, had become furious at the insult given them; and there was a general rush towards the doors, some of the rougher townsmen having a wild desire to intercept Lady Waring before she could leave the building, and tear the obnoxious-coloured dress she wore into strips. But she had been too quick for them, and had eluded both her husband's vigilance and theirs. She had hastened through the passages and lobby, and entering a conveyance which she had appointed to wait for her at the side entrance, had driven direct to her hotel. There she took up her startled maid and the boxes which had been packed in the afternoon, and drove without further delay to the station; and in less than a quarter of an hour was whirling through the darkness in a fast up-train to a country town not far from London. There she spent the night at a small, stuffy *Railway Hotel*, and the next morning took refuge with a favourite maiden aunt—of whom Sir Harry knew but little—who lived a mile or two from the town, and who had been prepared to expect her by the letter she had sent the previous day. She preferred to make this her retreat, rather than seek a shelter in her mother's house, as she well knew she could only expect a cold reception and severe blame from Lady Affington. Besides, her husband was more likely to seek her

at Kingsdene than anywhere else, and she was sufficiently in dread of him to desire that he should not discover her whereabouts, until time had passed.

There was great excitement in Westdown after the meeting had broken up the night before, and the exaggerations and false rumours which were taken as true, were multitudinous. Sir Harry, though certainly entitled to pity, received but very little of it from the inhabitants of the town. Public opinion set steadily against him. There were very few men or women in Westdown who did not believe that he had brutally ill-treated his wife, and that his conduct had driven her to do what she had done; no one could know what she had undergone; every one said his temper was fearful; jealousy might be at the bottom of it; ah! he was a thoroughly bad man: it was a plucky thing for a woman to do, after all, and it served him right. Then the probable consequences were discussed. Would they ever be reconciled, or would they separate? Was she gone to her mother's—or where? Would her relatives receive her? Had she gone off with any one, to spite Sir Harry, and what would he do if he found her? And so the gossips talked on until it became so late that the excited groups were compelled to disperse and retire to their homes.

When Sir Harry, finding his wife had left the town-hall, returned to the hotel only to discover that she had escaped him there also, his fury was ungovernable; nor was it diminished when he found on her dressing-table a note addressed to himself—a note so stinging in its concise sarcastic diction, that it seemed to madden him, and in his rage he tore the offending missive to atoms, scattering the pieces far and wide. He was undecided for some time how to act. The note had told him that the place in which she had taken refuge should never be known to him; but in spite of this he at first believed she had gone to her mother, to whom, and to other of his wife's relatives, he sent furious telegrams. But he soon abandoned that idea, bethinking himself how improbable it was she would fly from him to the place in which he was most likely to seek her. One of his friends made inquiries at the station as to the place for which Lady Waring had taken a ticket, but with no result—for her maid had taken the tickets, and she herself had not been noticed in the darkness. Sir Harry paced up and down the room in an almost frantic state, with such a lowering look upon his face, that one by-stander whispered to a friend: 'It's lucky her ladyship's off, or there'd have been murder done!' And indeed it was fortunate that Sir Harry was in total ignorance of his wife's retreat, for, had he known it, some terrible crime might have been committed, which would have cast a dark shadow over the rest of his life. At last, being almost worn out—strong and stalwart as he was—with fatigue and mental excitement, he listened to those of his friends who advised him to remain quietly at the hotel that night, and in calmer moments on the morrow, consider what should be his course of action.

With the morning came his agent and the prominent members of the party, eager to learn how he intended to act with regard to the now imminent election. A section of the latter expressed surprise that he had not decided to withdraw from the candidature already. Others,

however, still thought he might have a chance of gaining the seat, though with a diminished majority; and talked valorously of 'fighting to the end,' and winning by 'sheer pluck.' And Sir Harry, bent on defeating his wife's scheme against his success, resolved to go on with the election, if but to mortify and disappoint her; nor could any advice or entreaties shake his determination; and before noon it was known all over Westdown that he had not retired from the contest. His courage in continuing the struggle in spite of what had occurred, regained to him some of the votes forfeited by his supposed cruelty to his wife. But Westdown, as a whole, was against him; he was hooted in the streets, and pointed out by many who had before been his devoted partisans. Later in the day, his brother and one of the Affington family—a cousin of his wife—came to the town; the latter to express his deep regret at what had taken place, and on Lady Affington's behalf to inquire into the matter.

Lady Waring had told her mother little more in the letter she had written to her the previous day, than that she had had a violent quarrel with her husband, and was about to leave him; and that by the time the letter reached her, she would be safe with a relative; and she added, if her mother guessed with whom she was staying, she was on no account to give any clue to her husband or any of his family. The first intelligence of all her daughter had done was conveyed to the countess in the telegrams Sir Harry had sent; and she, whilst blaming Agnes for the notoriety and disgrace she had inflicted on herself and those related to her, felt sure the provocation must have been great to cause such an act, and she therefore sent her nephew to Westdown to discover the truth. She had little doubt that her daughter was with her aunt, but kept her surmises on that subject to herself; and intended to do so until her son-in-law's wrath had a little subsided, and there was a chance of some amicable arrangement between the parties. But Sir Harry would answer no inquiries, listen to no advice, and spoke in such a manner of his wife, that the chivalrous young champion refused to listen to such language about his cousin—culpable as she undoubtedly was—and finally left the hotel in dudgeon.

After his departure, Mr Waring attempted to persuade his brother to retire from the contest and leave Westdown at once, but without effect. Sir Harry was inflexible, and determined to go on to the end. The day of the election dawned, and it was easy to see from the first which had become the popular candidate. No one was surprised, therefore, when the state of the poll was declared, and the Hon. George Wynne was found to be member for Westdown by a majority of nearly two hundred.

Although Sir Harry had been greatly to blame in his conduct towards his wife, he was to be pitied as he returned to his hotel smarting under his defeat. Lady Waring had had her revenge as she desired, and a terribly bitter one it was to him. He felt in his present excited state that he could not face the contemptuous looks or hostile glances of the towns-people the next day; so, leaving his agent to settle everything connected with the election, he and his brother started for London by the mail-train that night.

In his overwhelming anxiety to leave the scene

of his recent mortification, he had forgotten how speedily news travels in these days. By the time he was breakfasting at his brother's chambers, the story of his defeat and its cause was being discussed by thousands of newspaper readers throughout the country. Had he been in London the day before, he would have seen such announcements as 'Extraordinary Scene at a Public Meeting,' 'Sensational Scene at Westdown,' 'Singular Conduct of a Candidate's Wife,' &c. on the newspaper bills. One daily paper had contained a stirring leader on the subject, and the quarrel between Sir Harry and Lady Waring was freely commented on by all classes. Considering the excitement, political and passionate, that he had undergone during the last few days, and added to this, his dread of pity or silent blame from friends and relatives, and considering, too, how dear the applause and envy of the world were to him, it is no wonder that his strength and nerve suddenly gave way, and that before many hours passed, Sir Harry was lying dangerously ill of brain-fever. For many weary days and nights his ravings shewed how vehement was his desire to be revenged on his wife; and he would attempt to spring from his bed and force his way from the room, having some confused idea of pursuing her, and striking her down with his wasted, trembling arm. The unfortunate man was kindly and carefully watched and tended by his brother and a nurse.

Lady Waring meanwhile still remained with the kind relative who had received her after her flight, and who, though a 'maiden aunt,' was far more 'motherly' towards her than Lady Affington had ever been. While she blamed her niece with gentle severity for her readiness in perceiving offence, and her tardiness in forgiving it; and for that last irrevocable act, which had separated her from home-happiness for the future, and divided her from her husband, if not from her other relatives, for the rest of her life—she still shewed genuine regard for her in a thousand ways, and soothed, advised, and softened her as no one else could have done. Lady Waring suffered keenly; yet she was still too proud to express even to her aunt what she felt; and far less could she do so to her husband. Knowing his nature—so like her own—she felt how utterly impossible it was that any reconciliation could take place between them. Lady Affington went to her before long, but it was an unsatisfactory interview. The mother's conventional horror at her conduct only checked her newly experienced feeling of remorse; and a coldness arose on both sides, so that, by tacit agreement, there was but little after-intercourse between them.

Lady Waring did not hear of her husband's illness till its worst phase was past. Even had Mr Waring known the place of her retreat, it would have been worse than useless to bring her to her husband's sick-room. Those around him knew how far he was from forgiving her. She remained with her aunt near London till her husband had partially regained his health; when a formal separation, on the ground of 'incompatibility of temper,' having taken place between them, she, with her aunt and maid, went to a quiet Devonshire watering-place to spend a few months in pleasant retirement; and Sir Harry, with his brother and a few friends, set out for a lengthened tour on the continent. Whether he and

his wife will ever meet again in this world, cannot be said; but let the story point a moral for those wives and husbands whose lives are rendered miserable from excess of pride and a lack of mutual forbearance.

THE MONTH:

SCIENCE AND ARTS.

THE opening by the Queen, of the Exhibition of Scientific Apparatus at South Kensington, may perhaps be taken as a sign that science will have more consideration in high places than it has had until quite recently. Whether the change will be for the advantage of science or not, remains to be seen. Meanwhile, the Exhibition is a surprise to scientific visitors, as much by the quality as by the prodigious quantity of articles there brought together. A large portion has been lent by foreign countries; and many foreigners eminent in science have visited London, some of them with instruction to draw up Reports on what they have seen. In this way the world at large will profit by the Kensington Exhibition.

It has long been known that the Commissioners of the Great Exhibition of 1851 have a large surplus remaining from the profits of that memorable undertaking. It is now rumoured that being desirous to discharge themselves of their responsibility, they are about to expend the money in the promotion of science. An astronomical observatory and a large library, both at South Kensington, are to be included in their scheme.

Speaking of exhibitions, of another kind is the annual show of pictures at the Royal Academy, and at the minor institutions which live on art. What becomes of all the rejected pictures? They are thousands in number every year. And for people who enjoy excitement at a distance, there are the Centennial Exhibition at Philadelphia, the prospect of a Grand International Exhibition at Paris in 1878, and the meeting of the Congress of Orientalists at St Petersburg in September next. The questions to be discussed by this learned assemblage will, of course, be ethnographical and philological: we select three from the published list, as specimens—Historical monuments teach us that during more than two thousand years, Siberia poured forth people after people upon Central Asia: what were the circumstances that led to that excess of population, and why did that excess and the emigrations cease with the conquest of Siberia by the Russians?—Is it possible, from the numerous Elamite proper names which have come down to us, to draw any decisive conclusions as regards the nationality of the Elamites?—To what extent do the mutual relations of the Arab tribes before Mohammed, serve to throw light on the political condition of the Israelite tribes of the time of the Judges?

With all this, which savours of peace, we hear of bigger and bigger war-ships, each excelling the other in destructive capabilities; and of torpedoes that swim under water at the rate of twenty miles

an hour for the purpose of sinking ships; and of guns so powerful that a single one is equivalent to a whole broadside of the good old times.

Mr Crookes and his radiometers with their remarkable movements continue to engage the attention of scientific men throughout Europe. Professor Wartmann of Geneva, in a series of experiments, has discovered that the motion of the vanes of the little mill can be made to spin direct or inverse at pleasure, or can be entirely neutralised. In the latter case, the rays of two lamps at unequal distances are concentrated on the vanes, and it is by the difference of distance that the effect is produced. From the general result of his experiments, Professor Wartmann is led to agree with Professor Osborne Reynolds of Owens College, Manchester, that the movement of the whirligig is occasioned by the dilatation of gas (or air) under very low pressure, and that radiation has nothing to do with it. It is impossible to produce a perfect vacuum. There is always a small quantity of air left in the glass apparatus in which the whirligig spins; and the warmth from the light placed near the glass affects this residual air, and occasions the rotation. Professor Challis of Cambridge, in accounting for the phenomenon, says, there is 'a decrement of *etheral density* from the dark towards the bright surface (of the vane), and the atoms, being immersed in this variation of density, will be urged as if the vane were pushed on the black surface.' With these explanations in mind, Mr Crookes and other experimentalists will now be able to proceed on new lines of discovery.

The printing of weather Reports, gradually adopted by all the countries of Europe, is now taken up by Denmark. The Report published by that country is particularly interesting, inasmuch as it includes tables and returns from the Faroe Isles, from Iceland, and from four stations in Greenland, one of them being Upernavik, the most northerly station in the world.

At the beginning of the present year, the druggists of Austria were ordered by the government to adopt the decimal system in their weights and measures. To facilitate the change, a table of equivalents in the old and the new system has been published, with special instructions for the prevention of mistakes. The gramme is the unit of weight. The numbers must be expressed in Arabic numerals: thus, 0.05 is to represent 5 centigrammes; and 2.50, two and a half grammes. Decagramme, 10 grammes, and decigramme (one-tenth of a gramme) are so similar in appearance, that they are not to be used; but 5 decagrammes are to be expressed by 50 grammes; and 5 decigrammes by 50 centigrammes.

At a meeting of the Entomological Society, nests of living trap-door spiders were exhibited which had been brought from Uitenhage, Cape Colony. Usually the nests are built in the earth; but in this instance they had been contrived in cavities in the bark of trees, with a small piece of bark as trap-door. By this arrangement, dis-

covery of the nest was almost impossible when the door was shut.

At the same meeting, Mr Riley, State entomologist of Missouri, United States, gave an account of the ravages of the Rocky Mountain locust over large areas of the north-west territory. Fears prevailed of an invasion of the settled districts; but Mr Riley, knowing something of the habits of the destructive insect, and that it could not exist in a moist climate, predicted that the devastation would not overpass a certain line; and found his prediction verified. He noticed that pigs and poultry grew fat on the invaders, and recommended the inhabitants of the distressed districts to eat locusts. A banquet was organised in St Louis, at which locusts cooked in various ways were eaten; and were pronounced excellent, especially when made into soup. It would seem like poetical justice that the destroyers should be eaten in the land where they had devoured every green thing.

Last year, Switzerland was afflicted by swarms of locusts; and a learned professor who surveyed the scene of their devastations recommended the government to use all available means to destroy the young which are deposited in the ground, and if left undisturbed, come forth with voracious appetite in the following summer. Spain, as we learn by recent advices, is suffering from a visitation of the devourers in some of the southern provinces, and there, in like manner, the eggs are hatched in the earth, and with marvellous quickness. It is said that if a packet of the eggs be carried in a man's pocket, the heat of his body will hatch them in twelve hours. The Spanish government has sent soldiers into the threatened districts with orders to dig and destroy. They must be active, for the numbers of the enemy are almost incredible. It is on record that two years ago a train was stopped by masses of locusts piled up, like driven snow, along the railway. A Frenchman has discovered that pounded locusts squeezed up into round lumps are an attractive bait for fish.

As a contrast to a picture of destruction, comes the information that the cultivation of the vine has succeeded so well in California, that the grape-crop is expected soon to rival the wheat-crop in importance. Narrow-gauge railways have been constructed, by which the 'vineyardists' in outlying places bring their grapes down to market. Large numbers of vine-cuttings were imported from Europe, and the best of them are now cultivated for wine or raisins, and port, sherry, and champagne are successfully produced. From 1871 to 1875, the quantity exported from the state, by land and sea, amounted to nearly five million gallons. It is a recommendation for Californian wines that they do not suffer from a sea-voyage.

The Duke of Manchester has tried experiments on his estate at Kimbolton, which are well worth consideration by all concerned in the breeding of live-stock. Desiring to convert arable land into pasture, he did not sow grass-seeds, but with a machine, made by Messrs Howard of Bedford, he cut ropes of sod two inches wide out of an old pasture. These ropes were carted to the field that was to be converted, were broken into pieces about two inches square, and were then placed in regular rows on the surface of the ground by women and children, who gave each piece a slight squeeze with their foot after laying it. The rows

are marked by the coulters of an empty corn-drill drawn over the land; and after the inoculation is finished, the field may be rolled whenever necessary. It was in November 1873 that the first field was thus treated. By the following autumn, it was completely covered with grass, and 'was nearly as level and good as old grass-land;' and in the second year was 'fit for grazing.' And as regards the pasture from which the ropes had been cut, we are told that 'after the first year the gaps in the turf were scarcely perceptible.'

Thus the tendency of grass to spread and fill up bare places, has been turned to profitable account. The subject is not new, nor is this the first time that it has been mentioned in these pages; but the making use of such small pieces of sod to inoculate the land is new. The cost is about three pounds an acre, which, as we are informed, is less than the cost of sowing with grass-seeds; and 'there is no falling-off experienced in the third, fourth, or fifth year, at least to the same extent as when land is laid down to pasture with artificial grasses.'

The plain of Gennevilliers, near Paris, had been from time immemorial a barren, sandy waste. Within the past few years a portion of the sewage of Paris has been discharged on that plain, and it now presents a scene of extraordinary fertility, comprising fruit, flowers, and vegetables in abundance. The best cultivators dig and lay out the land in beds two feet six inches in width, divided one from the other by channels of the same width. Through these channels the liquid sewage flows. Immediately after each crop is taken off, the bed is shifted to the channel, and the place of the bed becomes a channel. By this arrangement, the growing plants are always kept from actual contact with the sewage. What can be accomplished under this system may be judged of from the amount of produce per acre: for example—carrots, twenty tons; red beetroots for salad, thirty-five tons; French beans, six tons; cabbages, thirty tons; spinach, four tons; artichokes, about forty thousand heads. Five acres of land produced thirty-one tons of mint, worth two hundred pounds. A farmer who took some of the same land, grew fifty tons of 'mangolds,' thirty-two bushels of wheat, and fifty-six bushels of oats, to the acre. These are facts deserving of attention. The *Journal of the Royal Agricultural Society*, Part I. for the present year, contains full particulars of this subject and of the method of producing pasture by inoculation.

The progress of the cinchona plantations in India has been such that, as we learn from a paper read to the Society of Arts by Mr Markham, they now yield one hundred and forty thousand pounds of bark a year, with a tendency to increase. The advantage of cultivation over the crop of wild bark formerly collected on the slopes of the Andes, is, therefore, most strikingly demonstrated; and Mr Markham now advocates a similar experiment with the caoutchouc or india-rubber tree. The demand for india-rubber increases every year, and the supply—a wild one—diminishes. It is to be hoped, therefore, that the measures already taken to establish plantations of caoutchouc in the hot and moist hill-districts of India, will be persevered with until a sufficient quantity shall be grown, and the quality improved. The best kind of caoutchouc grows in South America.

A good thing has been done in India, by the holding of a conference of the functionaries in charge of the forests under the Inspector-general, Dr Brandis, F.R.S. The subjects discussed went over a wide range, from the best means of preventing forest-fires to the best and most profitable method of tree-culture; and in a country with such extremes and diversities of climate as India, the experience and observation of the officers would be very diverse, and would heighten the interest of their conference. The best method of planting in the hill-districts would not be the best method in the plains, and the discussion of the several methods would be instructive. Forest reserves, and the planting of waste lands, were strongly advocated; and the general result of the conference may be regarded as favourable to the art of forestry and the science of botany. The proceedings are to be printed, and circulated wherever interest in the subject is manifested.

There are prodigious quantities of coal in China, but not one coal-mine. An attempt is, however, about to be made to work the coal on proper principles, as the Chinese government have arranged for the purchase in England of the necessary 'plant,' which is to be employed in a district about forty miles to the west of Peking. Should coal-mining prove successful, it will in all probability lead to the smelting of the iron ore, of which China has also prodigious quantities.

The preparation known as 'negative gun-cotton,' used by photographers and others for the production of collodion, is soluble in an alcoholic solution of camphor. This fact led to the mixing of gun-cotton and camphor as an experiment, and the result appeared in the form of artificial ivory. But this result was not arrived at without the exercise of tremendous pressure; and now by the aid of hydraulic pressure, artificial ivory is every day produced, and manufactured into various articles. In some instances, especially billiard balls, the artificial is better than the real ivory. Recently, at a meeting in New York, Professor Seely mentioned that he had placed a few particles of camphor in a test-tube which was plugged with gun-cotton. The tube was set in a bath of hot water to test the effect of camphor vapour; but in a few minutes the tube appeared full of red mist, and the cotton exploded. Had the quantity been larger, there would have been danger in the experiment; and the conclusion is, that the manufacture of the artificial ivory may not be free from risk, and that increase of temperature during the process should be guarded against.

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Printed and Published by W. & R. CHAMBERS, 47 Paternoster Row, LONDON, and 339 High Street, EDINBURGH.